

CLAIMS

What is claimed is:

- 1 1. A method for storing data in a nonvolatile memory, comprising the computer-implemented steps of:
 - 3 determining a desired location in the nonvolatile memory for storing a data block;
 - 4 inserting an address value in the data block, wherein the address value identifies the
 - 5 desired location;
 - 6 prior to performing an operation that stores the data block to the nonvolatile memory,
 - 7 verifying that the address value contained within the data block correctly identifies
 - 8 the location in the nonvolatile memory into which the operation is going to store
 - 9 the data block; and
- 10 performing the operation to store the data block to the nonvolatile memory only if the
- 11 address value contained within the data block correctly identifies the desired
- 12 location in the nonvolatile memory into which the operation is going to store the
- 13 data block.
- 1 2. The method as recited in Claim 1, further comprising the computer-implemented step of after storing the data block to the nonvolatile memory,
 - 3 reading the data block from a location in the nonvolatile memory; and
 - 4 determining, based upon the address value contained within the data block, whether the
 - 5 data block was read from the desired location in the nonvolatile memory.
- 1 3. The method as recited in Claim 2, wherein the step of determining, based upon the address value contained within the data block, whether the data block was read from the desired location in the nonvolatile memory includes comparing at least a portion of the

4 address value contained within the data block with data that indicates the location in the
5 nonvolatile memory from which the data block was read.

1 4. The method as recited in Claim 1, further comprising the computer-implemented step of
2 maintaining a mapping that identifies a specific location in the nonvolatile memory into
3 which the data block is to be stored.

1 5. The method as recited in Claim 1, wherein:

2 the step of determining a location in the nonvolatile memory includes determining a
3 plurality of locations in the nonvolatile memory for storing the data block;
4 the step of inserting an address value in the data block includes inserting a plurality of
5 address values in the data block, wherein the plurality of address values identify
6 multiple locations in the nonvolatile memory into which the data block is to be
7 stored; and

8 the step of storing the data block to the nonvolatile memory includes storing the data
9 block into each of the multiple locations in the nonvolatile memory only after
10 verifying that the plurality of address values includes an address value that
11 correctly identifies the location in the nonvolatile memory into which the data
12 block is to be stored.

- 1 6. The method as recited in Claim 1, wherein:
- 2 the step of verifying that the address value contained within the data block
- 3 correctly identifies the location in the nonvolatile memory into which
- 4 the operation is going to store the data block is performed by a
- 5 storage device, and
- 6 the step of performing the operation to store the data block to the nonvolatile memory
- 7 only if the address value contained within the data block correctly identifies the
- 8 desired location in the nonvolatile memory into which the operation is going to
- 9 store the data block is performed by the storage device.
- 1 7. A computer-readable medium for storing data in a nonvolatile memory, the computer-
- 2 readable medium carrying instructions which, when processed by one or more processors,
- 3 cause the performance of the steps of:
- 4 determining a desired location in the nonvolatile memory for storing a data block;
- 5 inserting an address value in the data block, wherein the address value identifies the
- 6 desired location;
- 7 prior to performing an operation that stores the data block to the nonvolatile memory,
- 8 verifying that the address value contained within the data block correctly identifies
- 9 the location in the nonvolatile memory into which the operation is going to store
- 10 the data block; and
- 11 performing the operation to store the data block to the nonvolatile memory only if the
- 12 address value contained within the data block correctly identifies the desired
- 13 location in the nonvolatile memory into which the operation is going to store the
- 14 data block.

- 1 8. The computer-readable medium as recited in Claim 7, further comprising one or more
2 additional instructions which, when executed by the one or more processors, cause the
3 performance of the additional step of after storing the data block to the nonvolatile
4 memory,
5 reading the data block from a location in the nonvolatile memory; and
6 determining, based upon the address value contained within the data block, whether the
7 data block was read from the desired location in the nonvolatile memory.

- 1 9. The computer-readable medium as recited in Claim 8, wherein the step of determining,
2 based upon the address value contained within the data block, whether the data block was
3 read from the desired location in the nonvolatile memory includes comparing at least a
4 portion of the address value contained within the data block with data that indicates the
5 location in the nonvolatile memory from which the data block was read.

- 1 10. The computer-readable medium as recited in Claim 7, further comprising one or more
2 additional instructions which, when executed by the one or more processors, cause the
3 performance of the additional step of maintaining a mapping that identifies a specific
4 location in the nonvolatile memory into which the data block is to be stored.

- 1 11. The computer-readable medium as recited in Claim 7, wherein:
2 the step of determining a location in the nonvolatile memory includes determining a
3 plurality of locations in the nonvolatile memory for storing the data block;
4 the step of inserting an address value in the data block includes inserting a plurality of
5 address values in the data block, wherein the plurality of address values identify

multiple locations in the nonvolatile memory into which the data block is to be stored; and

the step of storing the data block to the nonvolatile memory includes storing the data block into each of the multiple locations in the nonvolatile memory only after verifying that the plurality of address values includes an address value that correctly identifies the location in the nonvolatile memory into which the data block is to be stored.

12. The computer-readable medium as recited in Claim 7, wherein:

the step of verifying that the address value contained within the data block

correctly identifies the location in the nonvolatile memory into which

the operation is going to store the data block is performed by a

storage device, and

the step of performing the operation to store the data block to the nonvolatile

memory only if the address value contained within the data block

correctly identifies the desired location in the nonvolatile memory

into which the operation is going to store the data block is performed

by the storage device.

13. An apparatus for storing data in a nonvolatile memory, the apparatus comprising a

memory storing instructions which, when processed by one or more processors, cause the

performance of the steps of:

determining a desired location in the nonvolatile memory for storing a data block;

inserting an address value in the data block, wherein the address value identifies the

desired location;

7 prior to performing an operation that stores the data block to the nonvolatile memory,
8 verifying that the address value contained within the data block correctly identifies
9 the location in the nonvolatile memory into which the operation is going to store
10 the data block; and
11 performing the operation to store the data block to the nonvolatile memory only if the
12 address value contained within the data block correctly identifies the desired
13 location in the nonvolatile memory into which the operation is going to store the
14 data block.

1 14. The apparatus as recited in Claim 13, wherein the memory further stores one or more
2 additional instructions which, when executed by the one or more processors, cause the
3 performance of the additional step of after storing the data block to the nonvolatile
4 memory,

5 reading the data block from a location in the nonvolatile memory; and
6 determining, based upon the address value contained within the data block, whether the
7 data block was read from the desired location in the nonvolatile memory.

1 15. The apparatus as recited in Claim 14, wherein the step of determining, based upon the
2 address value contained within the data block, whether the data block was read from the
3 desired location in the nonvolatile memory includes comparing at least a portion of the
4 address value contained within the data block with data that indicates the location in the
5 nonvolatile memory from which the data block was read.

16. The apparatus as recited in Claim 13, wherein the memory further stores one or more additional instructions which, when executed by the one or more processors, cause the performance of the additional step of maintaining a mapping that identifies a specific location in the nonvolatile memory into which the data block is to be stored.

1 17. The apparatus as recited in Claim 13, wherein:
2 the step of determining a location in the nonvolatile memory includes determining a
3 plurality of locations in the nonvolatile memory for storing the data block;
4 the step of inserting an address value in the data block includes inserting a plurality of
5 address values in the data block, wherein the plurality of address values identify
6 multiple locations in the nonvolatile memory into which the data block is to be
7 stored; and
8 the step of storing the data block to the nonvolatile memory includes storing the data
9 block into each of the multiple locations in the nonvolatile memory only after
10 verifying that the plurality of address values includes an address value that
11 correctly identifies the location in the nonvolatile memory into which the data
12 block is to be stored.

1 18. The apparatus as recited in Claim 13, wherein:
2 the step of verifying that the address value contained within the data block
3 correctly identifies the location in the nonvolatile memory into which
4 the operation is going to store the data block is performed by a
5 storage device, and
6 the step of performing the operation to store the data block to the nonvolatile

7 memory only if the address value contained within the data block
8 correctly identifies the desired location in the nonvolatile memory
9 into which the operation is going to store the data block is performed
10 by the storage device.